

**MEANDER POINT SUBDIVISION (PWS 5420040)  
SOURCE WATER ASSESSMENT FINAL REPORT**

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**July 18, 2001**



**State of Idaho  
Department of Environmental Quality**

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## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Meander Point Subdivision, Twin Falls, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Meander Point (PWS 5420040) drinking water system consists of two ground water sources, Well #1 and Well #2. A review of the Idaho Drinking Water Information System (DWIMS) revealed water quality information for the Meander Point drinking water system. No volatile organic compounds (VOCs), synthetic organic compounds (SOCs), or microbial contaminants were recorded for Well #1 or Well #2. From June 1995 to December 2000 there were 15 recorded total coliform detections at various sample locations in the distribution system. The total coliform detections may be associated with constructions project in the neighborhood. The system operator sent a notice to all previous contractors requiring them retain (in the future) a person to disinfect the connection system after installation.

Both wells are manifolded together and the sample location for the system is at the manifold. Consequently, any chemical detections recorded in DWIMS apply to both wells. In November 1996 and again in August 2000, arsenic was detected in water samples collected from the system manifold at a concentration of 0.007 milligrams per liter (mg/l) for both detections. These detections are well below the current Maximum Contaminant Level (MCL) for arsenic of 0.05 mg/l. The Safe Drinking Water Act requires the United States Environmental Protection Agency (EPA) to revise the current MCL for arsenic. In January 2001, EPA published a new standard for arsenic in drinking water that requires public water supplies to reduce arsenic to 0.01 mg/l by 2006. EPA is reviewing this standard so that communities that need to reduce arsenic in drinking water can proceed with confidence that the new standard is based on sound science and accurate cost estimates. Arsenic concentrations detected in the Meander Point wells are below the proposed new MCL for arsenic.

In November 1996, barium was detected in a water sample collected from the system manifold at a concentration of 0.04 mg/l, far below the MCL for barium of 2.0 mg/l. The inorganic compounds (IOCs), arsenic and barium, detected at the system manifold, are likely to be naturally occurring in the formations in which the wells were developed. From September 1993 to January 2001, nitrate was detected in water samples collected from the system manifold at concentrations ranging from 2.30 mg/l to 9.68 mg/l. The highest concentration of nitrate detected is just under the MCL for nitrate of 10 mg/l.

A Sanitary Survey conducted in 2000 made numerous recommendations for improving the Meander Point drinking water system. The recommendations included: installing a pump to waste capability for each well; installing a direct connection to the distribution system for each well; installing vacuum breakers to prevent cross connection; patching of holes in the pump house; cleaning the drain line; and installing a new well vent mesh screen on Well #2. The Sanitary Survey also recommended that Meander Point prepare a Cross-connection and Wellhead Protection Program. In terms of total susceptibility, Well #1 and Well #2 rated moderate for susceptibility to potential IOC, VOC, SOC and microbial contaminants. The moderate rating is mainly due to the aquifer properties, high countywide farm chemical use, and the presence of a nitrate priority area within the source water assessment area for the Meander Point drinking water system.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether

the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Meander Point, source water protection activities should first focus on implementing, if corrections have not been completed, the improvements outlined in the Sanitary Survey. Since historic nitrate levels are just below the MCL, Meander Point should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrate. Any spills from the agricultural research farm should be monitored carefully. Most of the source water protection designated area is outside the direct jurisdiction of Meander Point. Partnerships with state and local agencies and industry groups should be established and are critical to success. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of Meander Point Subdivision. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

# SOURCE WATER ASSESSMENT FOR MEANDER POINT, TWIN FALLS, TWIN FALLS COUNTY, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

### Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

### Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## **Section 2. Conducting the Assessment**

### **General Description of the Source Water Quality**

The Meander Point drinking water system is a community system that serves approximately 140 people through 53 connections. The system is located northwest of Twin Falls, just to the north of Rock Creek and to the south of the Snake River (Figure 1). The public drinking water system for Meander Point is currently comprised of two groundwater wells, Well #1 and Well #2.

Nitrates represent the main water chemistry issue recorded for the public water system. Nitrate concentrations detected at the system manifold from September 1993 to January 2001 approach the MCL for nitrate of 10 mg/l. In November 1996 and again in August 2000, arsenic was detected in water samples collected from the system manifold at a concentration well below the current MCL. In November 1996, a single detection of barium was reported for the system at a concentration well below the MCL. The IOCs arsenic and barium, detected in the Meander Point drinking water system are likely to be naturally occurring in the formations in which the wells were developed. No VOCs, SOCs, or microbial contaminants were recorded for the Meander Point drinking water system.

### **Defining the Zones of Contribution – Delineation**

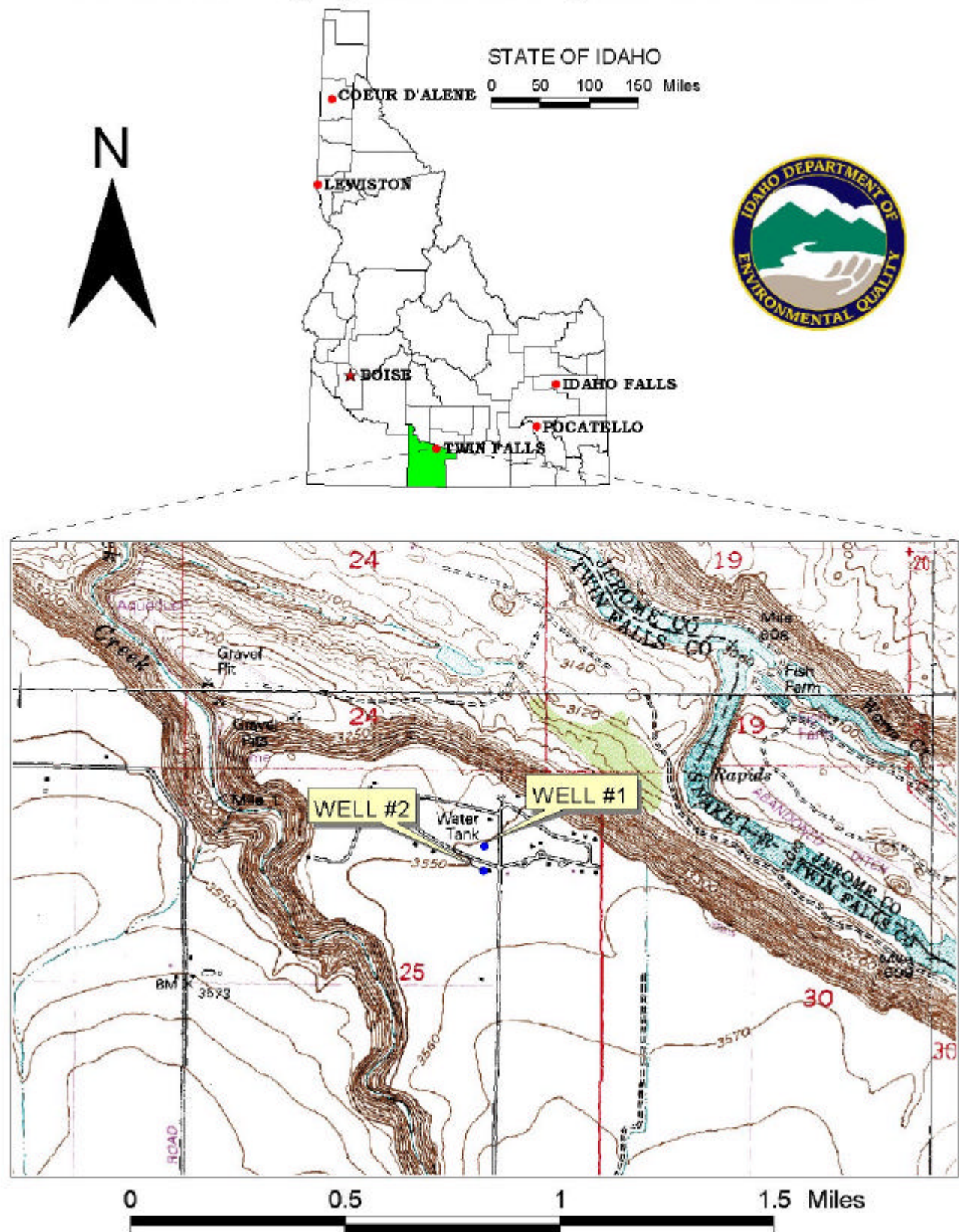
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Snake River Plain Aquifer in the vicinity of Twin Falls, Idaho. The computer model used site specific data, assimilated by DEQ from a variety of sources including the Meander Point Subdivision well logs, other local area well logs, and hydrogeologic reports summarized below.

The Meander Point wells extract water from the Banbury Basalt which overlies the Idavada Volcanics. The Idavada Volcanics unit consists of welded ash and tuff, rhyolite, and some basalt flows. The Idavada Volcanics are up to 2,000 feet thick in the Twin Falls area and contain fractures and columnar joints, allowing some mixing of the geothermal groundwater in the Idavada Volcanics with groundwater in the Banbury Basalt (Lewis and Young, 1989). The Banbury Basalt is of variable thickness and is the primary non-geothermal aquifer in the Twin Falls area (Moffat and Jones, 1984). Basalt flows fracture at the surface as they cool. The fractures occur in the horizontal direction throughout the flow. The Banbury Basalt is fractured and contains thin sedimentary interbeds. These fractures and sedimentary interbeds comprise the water producing zones in the Banbury Basalt. (Cosgrove, et al., 1997).

Regional ground water flow is to the north, but may vary with proximity to major creeks and the Snake River (Lewis and Young, 1989). Local groundwater flow in the Meander Point Subdivision source water assessment area is to the Northwest. The delineated capture zone is bounded by Rock Creek to the southwest and the Snake River to the north. Precipitation in the area is around 9 inches per year (Lewis and Young, 1989), however, a significant amount of infiltration occurs due to irrigation practices as well as canal seepage and loss from surface waters. Water leaves the area through consumptive use, loss to the Snake River, or underflow into the northern part of the Snake River Plain Aquifer (Cosgrove, et al., 1997).

The delineated source water assessment area for the Meander Point wells can best be described as a corridor, approximately 0.6 miles wide at the wellhead to 1.6 miles wide at southeast extent of the delineated source water assessment area, approximately 3.0 miles away. The delineated source water assessment area extends to the southeast from Meander Point, roughly parallel to Rock Creek (Figure 2). The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

**FIGURE 1. Geographic Location of Meander Pt. Subd.**



## Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside the Meander Point area is irrigated agriculture. Land use within the immediate area of the wellheads consists of residential property and irrigated agriculture.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

## Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during April 2001. This process involved identifying and documenting potential contaminant sources within Meander Point Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ.

Well #1 and Well #2 have a delineated source water assessment area that contains one identified potential contaminant source, an agricultural research farm (Table 1). Figure 2 shows the location of this potential contaminant site relative to the wellhead.

**Table 1. Meander Point Subdivision Well #1 and Well #2, Potential Contaminant Inventory**

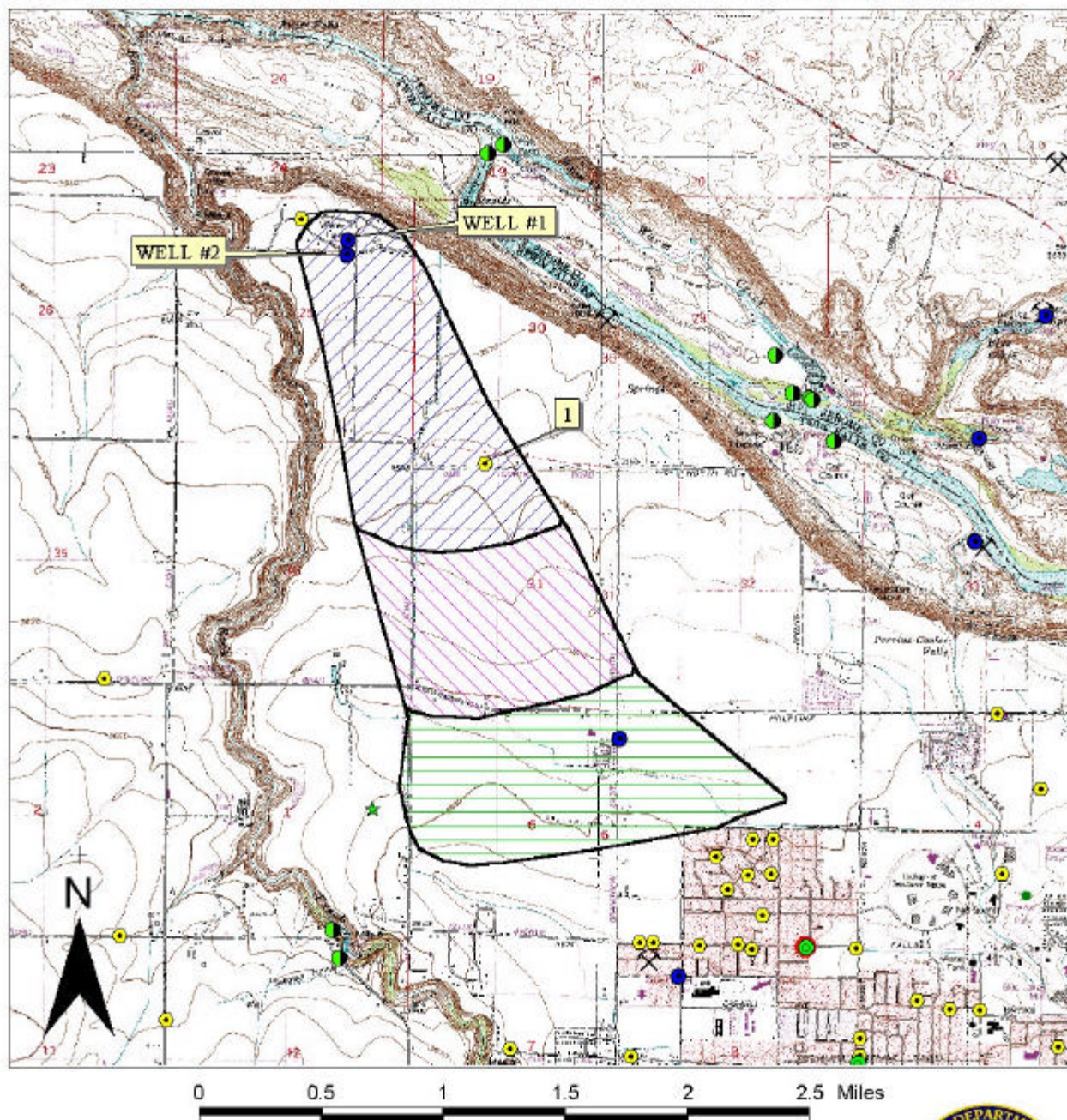
Site #	Source Description	TOT Zone <sup>1</sup> (years)	Source of Information	Potential Contaminants <sup>2</sup>
1	Seeds and Bulbs, wholesale; Agricultural Research	0-3	Database Search	IOC, VOC, SOC, Microbes

<sup>1</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>2</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical



Figure 2. Meander Pt. Subd. Delineation Map and Potential Contaminant Source Locations



**PWS# 5420040**  
**WELL #1, 2**



### **Section 3. Susceptibility Analyses**

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

#### **Hydrologic Sensitivity**

Hydrologic sensitivity was moderate for both wells (Table 2). This reflects the nature of the soils being in the moderately-drained to poorly-drained class which could protect the source water from downward moving contaminants. According to the well logs, the vadose zone (zone from land surface to the water table) is predominantly fractured basalt, which could provide a pathway for potential contaminants, allowing them to mix with the source water. Ground water exists within 300 feet of the ground surface and the wells do not contain at least 50 cumulative feet of low permeability units that could retard downward movement of contaminants.

#### **Well Construction**

Well construction directly affects the ability of the well to protect the aquifer from contaminants. The Meander Point drinking water system consists of two wells that extract ground water for domestic uses. The system construction score was moderate for both wells. A Sanitary Survey, conducted in 2000, found that the system was in substantial compliance with wellhead and surface seal standards. The Sanitary Survey listed numerous recommendations for improving the Meander Point drinking water system. The recommendations included: installing a pump to waste capability for each well; installing a direct connection to the distribution system for each well; installing vacuum breakers to prevent cross connection; patching of holes in the pump house; cleaning the drain line; and installing a new well vent mesh screen on Well #2. Failure to address these recommendations could result in potential contamination of the source water from backflow, particulate matter, or rodents and insects. The wells are not in the 100-year flood zone and are protected from surface flooding.

Well logs exist for both wells and show that the highest water production zone for the wells may be within 100 feet below static water level. Greater distance between the static water level and the major production zone creates a buffer between potential contaminants and the source water intake, providing greater opportunity for attenuation or adsorption of contaminants. The casings were extended into low permeability unit, protecting the wells from laterally migrating contaminants. The casing diameters for Well #1 and Well #2 are 10 inches and 8 inches, respectively. The 0.25-inch casing thickness for both wells does not meet IDWR standards of 0.322-inch thick casing for 8-inch diameter casing and 0.365-inch thick casing for 10-inch diameter casing as listed in the Recommended Standards for Water Works (1997).

The IDWR Well Construction Standards Rules (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the Recommended Standards for Water Works (1997) during construction. Under current standards, all PWS wells are required to have a 50-foot buffer around the wellhead. Additionally, all PWS wells are required to have pump tests. Wells producing less than 50 gallons per minute (gpm) are required to have a 4 hour minimum pump test and those producing greater than 50 gpm are required to have a 6 hour minimum pump test. Pump test data is not available for either well.

## Potential Contaminant Sources and Land Use

The Meander Point wells rated on the high end of moderate for IOCs (e.g., nitrates). The wells rated moderate for susceptibility to potential contamination from VOCs (e.g., petroleum products) and SOC (e.g., pesticides), and low for microbial contamination (e.g., total coliform). Agricultural land use, the presence of a nitrate priority area, and the presence of a potential contaminant source within the delineated source water assessment area contributed to the higher rating for IOCs relative to the other potential contaminants.

## Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, both wells rate moderate for susceptibility to potential IOC, VOC, SOC, and microbial contamination due to the moderate rankings for hydrologic sensitivity and system construction as well as the low number of potential contaminant sources in the source water assessment area. The presence of a nitrate priority area and high countywide farm chemical use also contribute to the susceptibility ranking.

**Table 2. Summary of the Meander Point Subdivision Susceptibility Evaluation**

Well	Susceptibility Scores <sup>1</sup>									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	M	M	M	L	M	M	M	M	
Well #2	M	M	M	M	L	M	M	M	M	

<sup>1</sup>H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,  
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

## Susceptibility Summary

Nitrates represent the main water chemistry issue recorded for the public water system. Nitrate concentrations detected in water samples collected from the system manifold from September 1993 to January 2001 approach the MCL for nitrate of 10 mg/l. In November 1996 and again in August 2000, arsenic was detected in water samples collected from the system manifold at a concentration well below the current MCL. In November 1996, a single detection of barium was reported for the system at a concentration well below the MCL. The IOCs arsenic and barium, detected in the Meander Point drinking water system are likely to be naturally occurring in the formations in which the wells were developed. No VOCs, SOC, or microbial contaminants were recorded for the Meander Point drinking water system.

A nitrate priority area crosses the Meander Point source water area. Countywide farm chemical use is considered high in this area and the delineated source water area for the wells is surrounded by a significant amount of irrigated agricultural land. Additionally, a potential source of contamination exists in the 3-year time of travel zone of the Meander Point source water area.

## **Section 4. Options for Source Water Protection**

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Meander Point, source water protection activities should focus on implementation of practices aimed at protecting the area nearest the well and addressing any needed improvements listed in the 2000 Sanitary Survey. Meander Point should also be diligent about monitoring spills from nearby businesses with potential IOC, VOC, SOC, or microbial contaminants. If concentrations of nitrate in the source water increase, Meander Point should investigate various systems like ion exchange, reverse osmosis, or activated alumina that could be used to treat nitrates.

Though water quality is generally good for Meander Point, with the exception of nitrate, the highly fractured nature of the basalt aquifer could lead to cross-contamination from shallower fractures to deeper fractures depending on well construction. Any surface releases of IOCs, VOCs, SOCs, or microbial contaminants should be monitored to prevent contaminants from infiltrating to the ground water producing zones. Most of the designated source water protection area is outside the direct jurisdiction of Meander Point. Twin Falls County has a Wellhead Protection Overlay District Ordinance that can provide additional protection for areas outside of the direct jurisdiction of Meander Point Subdivision. Partnerships with state and local agencies and industry groups should be established and are critical to success. Continued vigilance in keeping the well protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

## **Assistance**

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office           (208) 736-2190

State DEQ Office                               (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.



## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as “Superfund” is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100-year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

## References Cited

Cosgrove, D. M., Johnson, G. S., Brockway, C. E., Robison, C. W., *Geohydrology and Development of a Steady State Ground Water Model for the Twin Falls, Idaho Area*, 1997, Idaho Water Resources Research Institute, University of Idaho, Research Technical Completion Report.

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## Attachment A

### Meander Point Subdivision Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- ≥ 13 High Susceptibility



1. System Construction		SCORE			
Drill Date	4/5/77				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	4	1	1	
4 Points Maximum		4	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	7	7	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II Greater Than 50% Irrigated Agricultural Land		2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		2	2	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		1	1	1	0
Cumulative Potential Contaminant / Land Use Score		19	12	14	8
4. Final Susceptibility Source Score		10	8	9	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

1. System Construction		SCORE			
Drill Date	4/15/77				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	2000			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	4	1	1	
4 Points Maximum		4	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	7	7	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II Greater Than 50% Irrigated Agricultural Land		2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		2	2	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		1	1	1	0
Cumulative Potential Contaminant / Land Use Score		19	12	14	8
4. Final Susceptibility Source Score		10	8	9	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate